Testing the specificity of memory advantages in synaesthesia

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Introduction

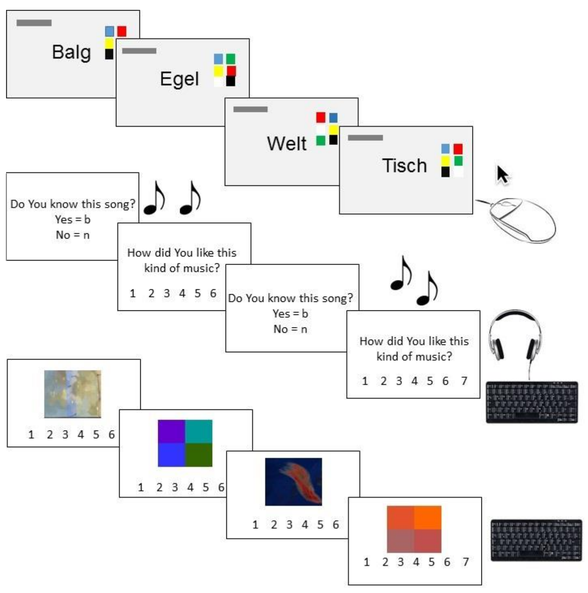
The goal of this study was to investigate whether synaesthesia comes with a general memory advantage or whether the advantage is domain-specific. Towards this goal we tested for groups of synaesthesia: **Grapheme-Colour**, **Grapheme-Colour-and-Sound-Colour**, **Sound-Colour** and **Sequence-Space**.

We used three recognition memory tasks which differed according to the stimulus materials (i.e., words, sounds, and pictures). For a general advantage, we expected better recognition memory for all synaesthetes compared to their control groups. For a domain-specific advantage, we expected better recognition memory for stimulus materials that corresponds to the specific inducers/concurrents (e.g., better memory for sound stimuli for sound-solour-synaesthetes).

Method

72 synaesthetes and 72 healthy controls matched by age and gender.

Study-Phase:



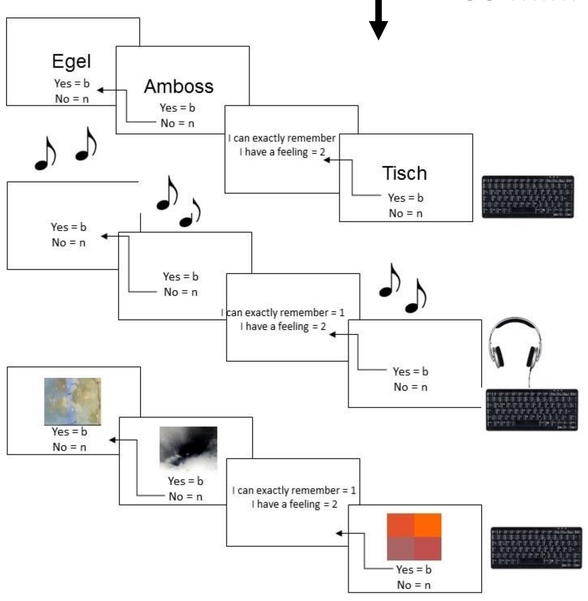
34 frequent and 34 infrequent German words.

24 10 sec. extracts from 10 musical genres.

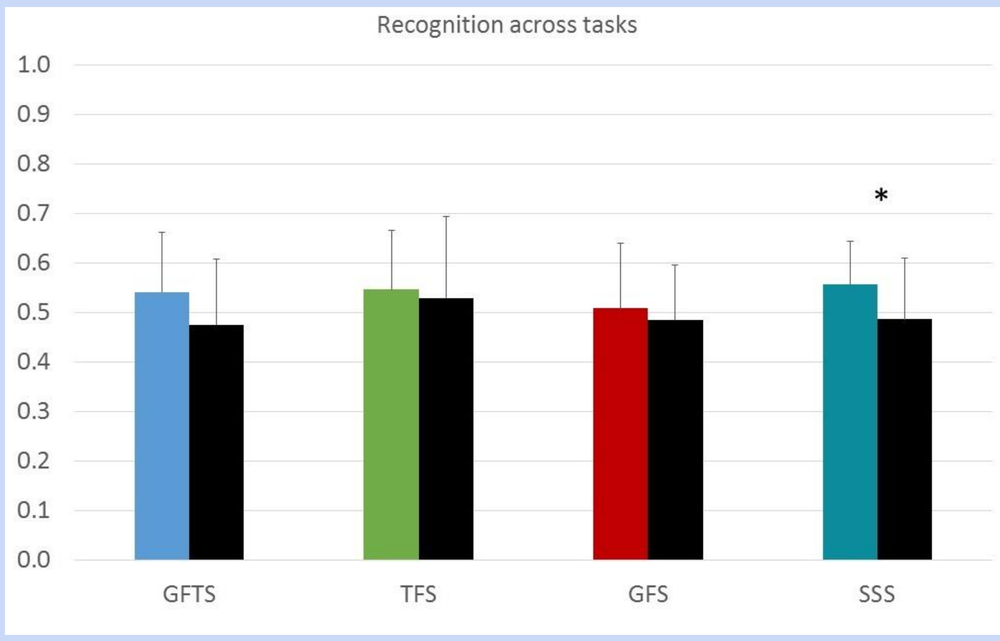
12 coloured squares and 12 abstract designs..

Test-Phase:

60 min. retention interval

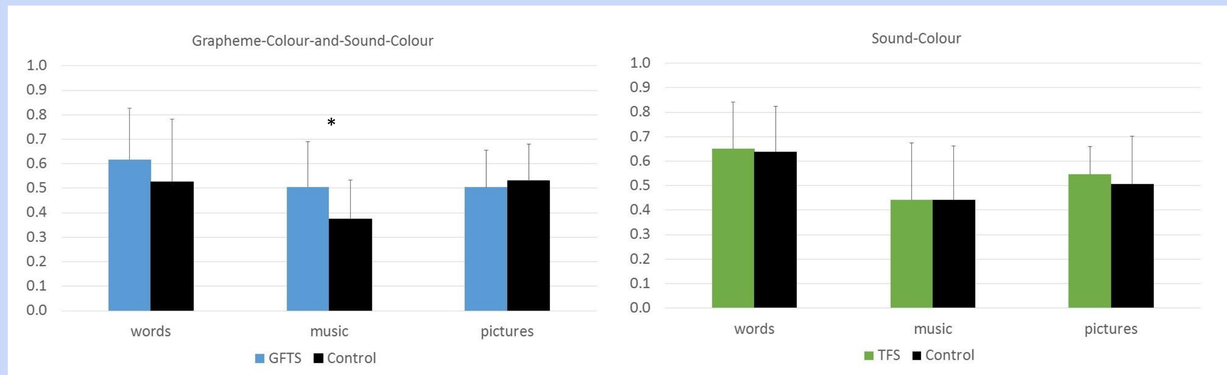


Results



MAge (SD):31.23 (15.03) *N*=20	*MAge (SD)*:37.78 (19.45) *N*=16	*MAge (SD)*:43.07 (17.31) *N*=18	*MAge (SD)*:31.86 (12.20) *N=18*

PR score (Hit-False Alarms) by group shows a significant advantage for Sequence-Space-Synaesthetes compared to their controls and a numerical advantage for all others.



PR scores by group of synaesthetic experience and stimulus material show a significant advantage for sound-stimuli in the Grapheme-Colour-and-Sound-Colour-Synaesthetes and for pictorial-stimuli in the Grapheme-Colour-Synaesthetes.

Conclusion

- Overall, there was a consistent tendency towards a recognition memory performance advantage for synaesthesia, suggesting a general effect.
- Moreover, detailed analyses suggest specific advantages for synaesthetes with graphemes as inducers.
- Further analyses are necessary to disentangle the domain-specific effects (e.g. along the associator/projector dimension, consistency and bandwidth, etc.)